IN THE SPECIFICATION

The paragraph beginning at page 1, line 17 of the substitute specification has been amended as follows:

X-ray luminophores are generally used in medical technology and destruction-free material testing. In these applications, scintillators with spontaneous emission under x-ray excitation are used, as well as storage luminophores with formation and storage of electrons and holes with subsequent photo-stimulated emission (PSL) upon irradiation with, for example, red light are used. The x-ray luminophores based on an alkali ~~halogenide~~ halide thereby assume a very particular role. Examples are CsI:Na in an x-ray intensifier, CsI:Tl in a-Si detectors or, of late, CsBr:Eu as a storage luminophore plate as described in Proc. of SPIE Vol. 4320 (2001), "New Needle-crystalline CR Detector" by Paul J. R. Leblans et al., pages 59 through 67.

The paragraph in the substitute specification beginning at page 1, line 27 has been amended as follows:

In all cited medical applications of alkali halogenide it is common that a high x-ray absorption must ensue to achieve a high DQE in the alkali ~~halogenide~~ halide layer, and the signal (light) must be clear over the noise. A high x-ray absorption is achieved by an approximately 500 – 600 µm thick alkali halogenide layer. The problem of a still-too-low light yield is still present in all cited medical applications. In particular the low light yield of the storage luminophore represents a problem that is still not completely solved.

The paragraph in the substitute specification beginning at page 2, line 5 has been amended as follows:

In United States Patent No. 5,028,509, example 14 describes the use of CsBr:Eu as a storage luminophore, produced from CsBr and Eu_2O_3. The general formula for the combination of the alkali ~~halogenide~~ halide luminophore (Cs and Br) is specified as follows:

$$(M_{1-x}.M'_x)X.aM''X'_2.bM'''X''_3 : dB,$$

whereby M = Cs or Rb, M^I is at least one alkali metal from the group Li, Na, K, Rb and Cs, M^{II} is at least one bivalent metal from the group Be, Mg, Ca, Sr, Ba, Zn, Cd, Cu and Ni, M^{III} is at least one metal from the group Sc, Y, La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Al, Ga and In, B is an activator that is at least one metal from the group Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nd, Yb, Er, Gd, Lu, Sm, Y, Tl, Na, Ag, Cu, Mg, Pb, Bi, Mn and In, X, X' and X'' are the same or different and represent a halogen atom from the group F, Cl, Br and I.

The paragraph in the substitute specification beginning 2, line 26 has been amended as follows:

In tests with storage luminophore powders, it has been shown that microscopically small phases of the doping material can be formed in the alkali ~~halogenide~~ halide. In vacuum-deposited layers of CsBr:Eu, these phases have not been found before. This is due to the Eu concentration in the layer being only maximally 3000 ppm (0.3 mol%), conditional upon production (different vapor pressures of CsBr and $EuBr_2$), while given the use of powder phases an optimal PSL signal was present only given Eu concentrations >1 mol%.

The paragraph in the substitute specification beginning at page 3, line 25 has been amended as follows:

In an advantageous manner, $Cs_xEu_yBr_{(x+2y)}$ can be used as an alkali halogenide phase and CsBr can be used as an alkali ~~halogenide~~ halide, such that a x-ray storage luminophore of the general formula CsBr: $Cs_xEu_yBr_{(x+2y)}$ forms.

The paragraph in the substitute specification beginning at page 4, line 1 has been amended as follows:

It has proven to be advantageous when a quantity x of the alkali halogenide phase and a quantity (600g –x) of the alkali ~~halogenide~~ halide are mutually vaporized.

The paragraph in the substitute specification beginning at page 4, line 5 has been amended as follows:

For inventive mixing, the alkali halogenide phase and the alkali halogenide can be mixed in the vaporization phase and in a vaporization boat, or the alkali halogenide phase and the alkali ~~halogenide~~ halide can be separately introduced in a ~~plurality~~ number of vaporization boats.

The paragraph in the substitute specification beginning at page 5, line 23 has been amended as follows:

CsBr: $Cs_xEu_yBr_{(x+2y)}$.

The general formula for the M^+ alkali ~~halogenides~~ halides Na, K, Rb and Cs as well as H^- ~~halogenides~~ halogens F, Cl, Br and I reads:

$$M'^{+}H''^{-} : M'^{+}{}_xEu_y\,H''^{-}{}_xH'''^{-}{}_{2y}, \text{ (also possible: .... } H'''{}_xH'{}_{2y})$$

whereby the ~~halogenides~~ halogens H''^- and H'''^- can be the same or different.

The paragraph in the substitute specification beginning at page 6, line 1 has been amended as follows:

Two (or more) alkali halogenides can also be used as a matrix lattice; the general sum formula then reads:

$$\left(M'^{+}\,H'^{-}\right)_{a}\left(M''^{+}\,H''^{-}\right)_{(1-a)} : M'^{+}{}_{x}\,Eu_{y}\,H'^{-}{}_{x}\,H'''^{-}{}_{2y}\ ,$$

whereby the alkali ~~halogenides~~ halides M'^{+} and M''^{+} can be the same as well as different. Likewise, the ~~halogenides~~ halogens H'^{-}, H''^{-} and H'''^{-} can be the same or different.